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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,849	09/12/2003	Stephen Palm	BP 2488.2	7056

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EXAMINER	
AJAYI, JOEL	

ART UNIT	PAPER NUMBER
2617	

MAIL DATE	DELIVERY MODE
01/29/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/660,849	PALM ET AL.	
	Examiner	Art Unit	
	Joel Ajayi	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-10,13-17 and 19-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 5-10, 13-17, 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 20, 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 5-10, 13-17, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Abramov et al. (U.S. Patent Number: 6486832)** in view of **Regnier et al. (U.S. Patent Application Number: 2003/0222818)**, and further in view **of Bulthuis (U.S. Patent Application Number: 2003/0119523).**

Consider **claim 1**; Abramov clearly discloses a method for operating a Wireless Local Area Network (WLAN) serviced by a plurality of Wireless Access Points (WAPs), at least some of the plurality of WAPs having directional antennas (fig. 5, column 4, line 55 - column 5, line 8; column 7, lines 30-34), the method comprising: performing a plurality of beaconing operations, each of the beaconing operations corresponding to a respective WAP of the plurality of WAPs such that during the beaconing operation the respective WAP transmits a substantially constant power beacon (column 4, line 55 - column 5, line 8; column 7, lines 3-6); during each beaconing operation, at least one non-beaconing WAP of the plurality of WAPs that has a directional antenna: listening for the transmitted beacon (column 4, line 55 - column 5, line 8); directing an approximate maximum gain vector (high gain position) of the directional antenna toward the transmitted beacon (column 4, line 55 - column 5, line 8); determining a relative angular position of the approximate maximum gain vector (high gain position) (column 4, line 55 - column 5, line

8); measuring a received strength of the transmitted beacon (column 4, line 55 - column 5, line 8; column 6, lines 37-40).

Abramov fails to disclose recording the relative angular position of the approximate maximum gain vector and the received strength of the transmitted beacon; and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN.

In the same field of endeavor Regnier clearly discloses recording the relative angular position of the approximate maximum gain vector (optimum) and the received strength of the transmitted beacon (paragraph 33, lines 1-6; paragraph 54, lines 1-25); and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN (paragraph 16, lines 1-5; paragraph 33, lines 1-6; paragraph 54, lines 1-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Regnier into the method of Abramov in order to provide beam forming transmission and reception capabilities.

Abramov and Regnier fail to disclose determining that wireless coverage within a premises serviced by the plurality of WAPS is deficient in at least one location of the premises; estimating relative geographical locations of the plurality of WAPS based upon the relative radio positions of the plurality of WAPS; and based upon estimates of the relative geographical

locations of the plurality of WAPs, determining geographical relocating of the at least one of the plurality of WAPs that will remedy the deficiency.

In the same field of endeavor Bulthuis discloses determining that wireless coverage within a premises serviced by the plurality of WAPS is deficient in at least one location of the premises; estimating relative geographical locations of the plurality of WAPS based upon the relative radio positions of the plurality of WAPS; and based upon estimates of the relative geographical locations of the plurality of WAPs, determining geographical relocating of the at least one of the plurality of WAPs that will remedy the deficiency (paragraph 6).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Bulthuis into the method of Abramov and Regnier in order to provide a method and system that facilitates the placement of devices in a system to improve system performance.

Consider **claim 9**; Abramov clearly discloses a Wireless Local Area Network (WLAN) processing component comprising: a network interface that interfaces the WLAN processing component to a plurality of Wireless Access Points (WAPs) of the WLAN, at least some of the plurality of WAPs having directional antennas (fig. 5, column 4, line 55 - column 5, line 8; column 7, lines 30-34); and a processor communicatively coupled to the network interface that executes a group of instructions (column 3, lines 53-61) comprising: a plurality of instructions that cause the WLAN processing component to direct the plurality of WAPs to perform a plurality of beaconing operations, each of the beaconing operations corresponding to a respective WAP of the plurality of WAPs such that during the beaconing operation the respective WAP transmits a substantially constant power beacon (column 4, line 55 - column 5, line 8; column 7,

lines 3-6); a plurality of instructions that cause the WLAN processing component to direct at least one non-beaconing WAP of the plurality of WAPs that has a directional antenna, during each beaconing operation, to: listen for the transmitted beacon (column 4, line 55 - column 5, line 8); direct an approximate maximum gain vector (high gain position) of the directional antenna toward the transmitted beacon (column 4, line 55 - column 5, line 8); determine a relative angular position of the approximate maximum gain vector (high gain position) (column 4, line 55 - column 5, line 8); measure a received strength of the transmitted beacon (column 4, line 55 - column 5, line 8; column 6, lines 37-40).

Abramov fails to disclose recording the relative angular position of the approximate maximum gain vector and the received strength of the transmitted beacon; and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN.

In the same field of endeavor Regnier clearly discloses recording the relative angular position of the approximate maximum gain vector (optimum) and the received strength of the transmitted beacon (paragraph 33, lines 1-6; paragraph 54, lines 1-25); and processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN (paragraph 16, lines 1-5; paragraph 33, lines 1-6; paragraph 54, lines 1-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Regnier into the method of Abramov in order to provide beam forming transmission and reception capabilities.

Abramov and Regnier fail to disclose determining that wireless coverage within a premises serviced by the plurality of WAPS is deficient in at least one location of the premises; a plurality of instructions that cause the WLAN processing component to estimate the relative geographical locations of the plurality of WAPs based upon the relative radio positions of the plurality of WAPS; and a plurality of instructions that cause the WLAN processing component to, based upon estimates of the relative geographical locations of the plurality of WAPs, determine geographical relocating of the at least one of the plurality of WAPs that will remedy the deficiency.

In the same field of endeavor Bulthuis discloses determining that wireless coverage within a premises serviced by the plurality of WAPS is deficient in at least one location of the premises; a plurality of instructions that cause the WLAN processing component to estimate the relative geographical locations of the plurality of WAPs based upon the relative radio positions of the plurality of WAPS; and a plurality of instructions that cause the WLAN processing component to, based upon estimates of the relative geographical locations of the plurality of WAPs, determine geographical relocating of the at least one of the plurality of WAPs that will remedy the deficiency (paragraph 6).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Bulthuis into the method of Abramov and

Regnier in order to provide a method and system that facilitates the placement of devices in a system to improve system performance.

Consider **claim 17**; Abramov clearly discloses a Wireless Local Area Network (WLAN) processing component comprising: a network interface that interfaces the WLAN processing component to a plurality of Wireless Access Points (WAPs) of the WLAN, at least some of the plurality of WAPs having directional antennas (fig. 5, column 4, line 55 - column 5, line 8; column 7, lines 30-34); and means for performing a plurality of beaconing operations, each of the beaconing operations corresponding to a respective WAP of the plurality of WAPs such that during the beaconing operation the respective WAP transmits a substantially constant power beacon (column 4, line 55 - column 5, line 8; column 7, lines 3-6); means for, during each beaconing operation, at least one non-beaconing WAP of the plurality of WAPs that has a directional antenna: listening for the transmitted beacon (column 4, line 55 - column 5, line 8); directing an approximate maximum gain vector (high gain position) of the directional antenna toward the transmitted beacon (column 4, line 55 - column 5, line 8); determining a relative angular position of the approximate maximum gain vector (high gain position) (column 4, line 55 - column 5, line 8); measuring a received strength of the transmitted beacon (column 4, line 55 - column 5, line 8; column 6, lines 37-40).

Abramov fails to disclose recording the relative angular position of the approximate maximum gain vector and the received strength of the transmitted beacon; and means for processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN.

In the same field of endeavor Regnier clearly discloses recording the relative angular position of the approximate maximum gain vector (optimum) and the received strength of the transmitted beacon (paragraph 33, lines 1-6; paragraph 54, lines 1-25); and means for processing a plurality of recorded relative angular positions of the approximate maximum gain vectors and a plurality of recorded received strengths of the transmitted beacons to determine relative radio positions of the plurality of WAPs within the WLAN (paragraph 16, lines 1-5; paragraph 33, lines 1-6; paragraph 54, lines 1-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Regnier into the method of Abramov in order to provide beam forming transmission and reception capabilities.

Abramov and Regnier fail to disclose determining that wireless coverage within a premises serviced by the plurality of WAPS is deficient in at least one location of the premises; means for estimating relative geographical locations of the plurality of WAPS based upon the relative radio positions of the plurality of WAPS; and means for, based upon estimates of the relative geographical locations of the plurality of WAPs, determining geographical relocating of the at least one of the plurality of WAPs that will remedy the deficiency.

In the same field of endeavor Bulthuis discloses determining that wireless coverage within a premises serviced by the plurality of WAPS is deficient in at least one location of the premises; means for estimating relative geographical locations of the plurality of WAPS based upon the relative radio positions of the plurality of WAPS; and means for, based upon estimates of the relative geographical locations of the plurality of WAPs, determining geographical

relocating of the at least one of the plurality of WAPs that will remedy the deficiency (paragraph 6).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of Bulthuis into the method of Abramov and Regnier in order to provide a method and system that facilitates the placement of devices in a system to improve system performance.

Consider **claim 2**; Regnier discloses that transmitting the substantially constant power beacon includes transmitting the beacon omni directionally (paragraph 6, lines 1-4).

Consider **claim 5**; Bulthuis discloses that the repositioning comprises: receiving relative physical positions of the plurality of WAPs; correlating the relative physical positions of the plurality of WAPs with the relative radio positions of the plurality of WAPs; determining the repositioning of at least one of the plurality of WAPs to remedy the deficiency is based upon the correlation of the relative physical positions of the plurality of WAPs with the relative radio positions of the plurality of WAPs (paragraph 6).

Consider **claim 6**; Abramov discloses that the relative radio positions of the plurality of WAPs within the WLAN: determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and determining an alteration of an antenna gain pattern of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (column 6, lines 33-40; column 7, lines 30-34).

Consider **claims 7, 20**; Regnier discloses that the relative radio positions of the plurality of WAPs within the WLAN: determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and determining an

alteration of transmit power of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (paragraph 33 and 42).

Consider **claims 8, 21**; Bulthuis discloses that the relative radio positions of the plurality of WAPs within the WLAN: determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; determining that an additional WAP is required to remedy the deficiency; and recommending a placement of the additional WAP with respect to the relative radio positions of the plurality of WAPs within the WLAN (paragraph 6).

Consider **claim 10**; Regnier discloses that the processor further executes a plurality of instructions that cause the WLAN processing component to direct the respective WAP to transmit the substantially constant power beacon omni directionally (paragraph 6, lines 1-4).

Consider **claim 13**; Bulthuis discloses that the plurality of instructions that cause the WLAN processing component to determine a repositioning of at least one of the plurality of WAPs to remedy the deficiency include: a plurality of instructions that cause the WLAN processing component to receive relative physical positions of the plurality of WAPs; a plurality of instructions that cause the WLAN processing component to correlate the relative physical positions of the plurality of WAPs with the relative radio positions of the plurality of WAPs; and a plurality of instructions that cause the WLAN processing component to determine the repositioning of at least one of the plurality of WAPs to remedy the deficiency based upon the correlation of the relative physical positions of the plurality of WAPs with the relative radio positions of the plurality of WAPs (paragraph 6).

Consider **claim 14**; Abramov discloses a plurality of instructions that cause the WLAN processing component to, based upon the relative radio positions of the plurality of WAPs within the WLAN, determine that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and a plurality of instructions that cause the WLAN processing component to determine an alteration of an antenna gain pattern of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (column 6, lines 33-40; column 7, lines 30-34).

Consider **claim 15**; Regnier discloses a plurality of instructions that cause the WLAN processing component to, based upon the relative radio positions of the plurality of WAPs within

the WLAN, determine that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and a plurality of instructions that cause the WLAN processing component to, based upon the relative radio positions of the plurality of WAPs within the WLAN, determine an alteration of transmit power of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (paragraph 33 and 42).

Consider **claim 16**; Bulthuis discloses a plurality of instructions that cause the WLAN processing component to, based upon the relative radio positions of the plurality of WAPs within the WLAN, determine that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; a plurality of instructions that cause the WLAN processing component to, based upon the relative radio positions of the plurality of WAPs within the WLAN, determine that an additional WAP is required to remedy the deficiency; and a plurality of instructions that cause the WLAN processing component to, based upon the relative radio positions of the plurality of WAPs within the WLAN, recommend a placement of the additional WAP with respect to the relative radio positions of the plurality of WAPs within the WLAN (paragraph 6).

Consider **claim 19**; Abramov discloses that based upon the relative radio positions of the plurality of WAPs within the WLAN, determining that wireless coverage within a premises serviced by the plurality of WAPs is deficient in at least one location of the premises; and means for determining an alteration of an antenna gain pattern of at least one of the plurality of WAPs having a directional antenna to remedy the deficiency (column 6, lines 33-40; column 7, lines 30-34).

Conclusion

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Joel Ajayi whose telephone number is (571) 270-1091. The Examiner can normally be reached on Monday-Friday from 7:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Charles Appiah can be reached on (571) 272-7904. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Joel Ajayi

CHARLES N. APPIAH
SUPERVISORY PATENT EXAMINER